

## AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions, and listings, of claims in the captioned patent application:

### **Listing of Claims:**

1-19. (Cancelled)

20. (Previously Presented) An evoked neural response measuring device comprising:

a first implantable subsystem comprising a high gain amplifier having a reference voltage input and a signal input, and an electrode array configured to provide stimulation to the auditory nerve and further configured to successively detect discrete values corresponding to an evoked neural response from the auditory nerve to said stimulation; and

a second subsystem configured to reconstruct said plurality of discrete values into a continuous waveform,

wherein said first implantable subsystem is configured to set said reference voltage to a first of said detected discrete values at a first time and to a second of said detected discrete values at a second time, wherein said amplifier is configured to amplify the difference between the first and second discrete values thereby obtaining a plurality of discrete values collectively representing an unsaturated, high gain amplified version of the evoked neural response of the auditory nerve.

21. (Cancelled)

22. (Previously Presented) The device of claim 20, wherein said second subsystem comprises:

an integrator configured to reconstruct said plurality of detected discrete values into said continuous waveform.

23. (Previously Presented) The device of claim 20, wherein said first subsystem is configured to set said reference voltage input to said first of said detected discrete values of said evoked response at the commencement of each said time interval, and wherein said 1<sup>st</sup> subsystem is configured to set said signal input to said second of said detected discrete values of said evoked response at end of each said interval.

24. (Previously Presented) The device of claim 20, wherein said first subsystem further comprises:

a sample-and-hold circuit having an input from said electrode array configured to set the reference voltage of said amplifier equal to a present value of the evoked response at the commencement of each said interval.

25. (Previously Presented) A method of measurement of an evoked neural response in a cochlear implant comprising:

stimulating a desired section of an auditory nerve via an electrode array to elicit an evoked neural response via a first implanted subsystem comprising a high gain amplifier having a reference voltage input and a signal input;

successively setting the reference voltage input to a first of said discrete values detected by the electrode array at a first time;

successively setting the signal input to a second of said discrete values detected by the electrode array at a second time;

amplifying the difference between the first and second discrete values thereby obtaining a plurality of discrete values collectively representing an unsaturated, high gain amplified version of the evoked neural response; and

reconstructing said amplified plurality of discrete values into a continuous waveform.

26. (Cancelled)

27. (Previously Presented) The method of claim 25, wherein each setting of said reference voltage comprises:

setting said reference voltage equal to a present value of the evoked neural response at the commencement of each interval.

28. (Cancelled)

29. (Previously Presented) The method of claim 25, wherein setting the reference voltage of the high gain amplifier equal to said first value comprises:

setting the reference voltage of the high gain amplifier equal to the present value of the evoked neural response at the commencement of each said interval.

30. (Previously Presented) The method of claim 25, wherein reconstructing said plurality of discrete values into the continuous waveform comprises:

integrating said plurality of discrete values to obtain said continuous waveform.

31. (Previously Presented) The method of claim 25, wherein obtaining said first and second values comprises:

utilizing one or more electrodes of an electrode array of a cochlear implant to obtain said values.

32. (Previously Presented) A device for measuring of an evoked neural response in a cochlear implant comprising:

means for stimulating a desired section of an auditory nerve via an electrode array to elicit an evoked neural response via a first implanted subsystem comprising a high gain amplifier having a reference voltage input and a signal input;

means for successively setting the reference voltage input to a first of said discrete values detected by the electrode array at a first time;

means for successively setting the signal input to a second of said discrete values detected by the electrode array at a second time;

means for amplifying the difference between the first and second discrete values thereby obtaining a plurality of discrete values collectively representing an unsaturated, high gain amplified version of the evoked neural response; and

means for reconstructing said amplified plurality of discrete values into a continuous waveform.

33. (Previously Presented) The device of claim 32, wherein said means for sampling the evoked neural response at the plurality of intervals includes:

means for successively altering a reference voltage of a high gain amplifier at the commencement of each said interval such that each discrete value equals an amplified form of the voltage change in the evoked neural response over said interval.

34. (Previously Presented) The device of claim 33, wherein each means for altering said reference voltage comprises:

means for setting said reference voltage equal to a present value of the evoked neural response.

35. (Cancelled)

36. (Previously Presented) The device of claim 32, wherein said means for setting the reference voltage of the high gain amplifier equal to said first value comprises:

means for setting the reference voltage of the high gain amplifier equal to the present value of the evoked neural response at the commencement of each said interval.

37. (Previously Presented) The device of claim 32, wherein said means for reconstructing said plurality of discrete values into the continuous waveform comprises:

means for integrating said plurality of discrete values to obtain said continuous waveform representing an amplified form of said evoked neural response.

38. (Previously Presented) The device of claim 32, wherein said means for obtaining said first and second values comprises:

means for utilizing one or more electrodes of an electrode array of a cochlear implant to obtain said values.